

Non-Linear Simultaneous Equations



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REVISE THIS
TOPIC

CHECK YOUR
ANSWERS

1 Solve algebraically the simultaneous equations

$$y = x^2 - 3x - 4$$
$$y = 2x - 10$$



(Total for Question 1 is 5 marks)

2 Solve algebraically the simultaneous equations

$$y = x^2 + 5x - 8$$
$$y - 4x = 4$$



(Total for Question 2 is 5 marks)



1



3 Solve algebraically the simultaneous equations



$$y = 3x^2 + 2x - 8$$
$$y = 9x - 10$$

.....
(Total for Question 3 is 5 marks)

4 C is a graph with equation $y = x^2 - 5x + 10$



L is a straight line with equation $y = 3x - 6$

Using algebra, find the coordinates of the point of intersection of C and L.
You must show all your working.

(.....,)

(Total for Question 4 is 4 marks)



5 C is a graph with equation $y = 5x^2 - x - 15$



L is a straight line with equation $y = 10x - 3$

Using algebra, find the coordinates of the points of intersection of C and L.
You must show all your working.

(.....,))

(.....,))

(Total for Question 5 is 5 marks)

6 Solve algebraically the simultaneous equations



$$y = x^2 + x + 1$$

$$y = x + 3$$

Give your answers as exact values.

.....
(Total for Question 6 is 5 marks)



7 Solve algebraically the simultaneous equations



$$x^2 + y^2 = 100$$
$$y = x - 2$$

.....
(Total for Question 7 is 5 marks)

8 Solve algebraically the simultaneous equations



$$x^2 + y^2 = 200$$
$$y = 2x - 10$$

.....
(Total for Question 8 is 5 marks)





9 C is a graph with equation $x^2 + y^2 = 65$

L is a straight line with equation $2y = 10 - x$

Using algebra, find the coordinates of the point of intersection of C and L.
You must show all your working.

(..... ,)

(..... ,)

(Total for Question 9 is 5 marks)

10 C is a graph with equation $x^2 + y^2 = 85$



L is a straight line with equation $y + 3x = 25$

Using algebra, find the coordinates of the points of intersection of C and L.
You must show all your working.

(..... ,)

(..... ,)

(Total for Question 10 is 5 marks)



11 Solve algebraically the simultaneous equations



$$x^2 - 2y^2 = 7$$

$$2y = x + 1$$

.....
(Total for Question 11 is 5 marks)

12 C is a graph with equation $2x^2 - 3y^2 = 7$



L is a straight line with equation $y = x - 2$

Using algebra, find the coordinates of the points of intersection of C and L.
You must show all your working.

(..... ,)

(..... ,)

(Total for Question 12 is 5 marks)





13 C is a graph with equation $x^2 - 8y^2 = k$ where k is a positive integer.

L is a straight line with equation $4y = x - 1$

L and C intersect at points A and B.

The x -coordinate of point A is -7 .

(a) Work out the value of k .

$k = \dots\dots\dots$
(3)

(b) Work out the coordinates of point B.

(.....,)
(4)

(Total for Question 13 is 7 marks)

